TEST REPORT

Application No.....:	S20230417894001
Applicant's name...:	Lumi United Technology Co., Ltd
Applicant's address:	Room 801-804, Building 1, Chongwen Park, Nanshan iPark, No. 3370, Liuxian Avenue, Fuguang Community, Taoyuan Residential District, Nanshan District, Shenzhen, China
Sample description:	Dual Relay Module T2
Model.....:	DCM-K01
Date of receipt of test item.....:	2023-04-13
Test location.....:	G9 building, China Sensor Network International innovation Park, No.200, Linghu Ave, new district of Wuxi,China
Test standard.....:	**EN 50665:2017**
Test date(s).....:	2023-05-16
Test result.....:	The test results are in compliance with the above mentioned standards.
Date of issue.....:	2023-07-20

Compiled by:	**Reviewed by:**	**Approved by:**
Qianlan Sang	Amos Xia	Line Chen

FANGGUANG INSPECTION & TESTING CO.,LTD. APPROVED(02)

Other aspects: N/A

Abbreviations: *P = passed; F = failed; N/A = not applicable*

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Contents

1 General description of EUT

1.1 Testing Facility

Test Site
Fangguang Inspection & Testing Co., Ltd.
Test Site Location
G9 building, China Sensor Network International innovation Park, No.200, Linghu Ave, new district of Wuxi,China

1.2 Feature of Equipment Under Test

Product Name	Dual Relay Module T2
Model No.	DCM-K01
Hardware Version	x4
Software Version	0.0.0_0023

1.3 Basic Description of Equipment Under Test

Frequency Range	2405-2475 MHz
Number of Channels	Zigbee: 15
Channel Spacing	Zigbee: 5MHz
Antenna Gain	1dBi
Type of Modulation	Zigbee: O-QPSK

2 Technical Requirements Specification In EN50665

2.1 RF Exposure Evaluation

The conformity assessment to demonstrate equipment compliance shall be made according to EN 62311:2008.

2.2 Effective Radiated Power

According to EN 62311, If the average power emitted by the base station is less than or equal to 20 mW then the base station is deemed to comply without testing.

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If the average power emitted by the base station is more than 20 mW, then E, H or SAR calculations and/or measurements shall be performed according to Clause 4. The results of calculations and/or measurements shall be compared directly to the limits.

The product is deemed to fulfil the requirements of this standard if the calculated and/or measured values are less than or equal to the limits.

NOTE In the setting of basic restrictions and the derived reference levels, safety factors have been taken into account. In the specification of the assessment method, uncertainty has been constrained. This is the reason for not requiring that the measured values shall be compared to the limit reduced by the measurement uncertainty.

Test conclusion:

MPE calculate procedure:

According to the formula $\mathrm{E}\ (\mathrm{V/m}) = \frac{\sqrt{30PG}}{d}$

Where: E = Electric Field (V/m)

P = Peak RF Output Power (W)

G = EUT Antenna Numeric Gain (numeric)

d = Separation Distance between Radiator and Human Body (m)

And the limit of Council Recommendation 1999/519/EC

Reference levels for electric, magnetic and electromagnetic fields (0 Hz to 300 GHz, unperturbed rms values)

Frequency range	E-field strength (V/m)	H-field strength (A/m)	B-field (μT)	Equivalent plane wave power density S_{eq} (W/m^2)
0-1 Hz	—	$3,2 \times 10^4$	4×10^4	—
1-8 Hz	10 000	$3,2 \times 10^4/f^2$	$4 \times 10^4/f^2$	—
8-25 Hz	10 000	4 000/f	5 000/f	—
0,025-0,8 kHz	250/f	4/f	5/f	—
0,8-3 kHz	250/f	5	6,25	—
3-150 kHz	87	5	6,25	—
0,15-1 MHz	87	0,73/f	0,92/f	—
1-10 MHz	$87/f^{1/2}$	0,73/f	0,92/f	—
10-400 MHz	28	0,073	0,092	2
400-2 000 MHz	$1,375\ f^{1/2}$	$0,0037\ f^{1/2}$	$0,0046\ f^{1/2}$	f/200
2-300 GHz	61	0,16	0,20	10

Notes:

1. *f* as indicated in the frequency range column.

2.3 Evaluation Results

Now the EUT frequency rang in 2405~2475MHz, the limit S are 10W/m^2. from the peak EUT RF Output Power, the minimum mobile separation distance, d = 0.20m (specified by the manufacturer), as well as the gain of the used antenna, the RF power density can be obtained.

Modulation Type: ZIGB

Operating Mode with Modulation(max power)			
EIRP Level (dBm)	EIRP Level (mW)	Equivalent plane wave power density S_{eq}(W/m^2)	Limit of Equivalent plane wave power density S_{eq}(W/m^2)
9.47	8.85	0.018	10

MPE=PG/(4*π*0.2^2)= 0.018 W/m^2＜10 W/m^2

Which is less than the limit, RF exposure assessment has been performed above to prove that this unit will not generate the harmful EM emission above the reference level as specified in EC Council Recommendation (1999/519/EC).

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